

<b>B.Tech</b>	<b>IV Year</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>To</b>	<b>C</b>
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**CE437 AIR POLLUTION AND CONTROL****(Dept. Elective - IV)****Course Description and Objective:**

*This course serve to provide the student with an introduction or refresher in the basics of air pollution control. After completing this course, the student should be familiar with the various interrelated aspects of air pollution control, understand the basic terminology, and have a rudimentary understanding of some of the technical aspects of regulating, measuring, and controlling air pollution. The student will find links to the Environmental Protection Agency (EPA) Web site for further research in the air pollution control field.*

**Course Outcomes:**

- *Identify sampling and analysis techniques for air quality assessment*
- *Describe the plume behaviour for atmospheric stability conditions*
- *Apply plume dispersion modelling and assess the concentrations*
- *Design air pollution controlling devices*

**UNIT – I**

**Introduction to air pollution :** Air Pollution – Definitions, Scope, Significance and Episodes, Air Pollutants – Classifications – Natural and Artificial – Primary and Secondary, point and Non- Point, Line and Areal Sources of air pollution- stationary and mobile sources.

**UNIT – II**

**Effects of air pollution:** Effects of Air pollutants on man, material and vegetation: Global effects of air pollution – Green House effect, Heat Islands, Acid Rains, Ozone Holes etc.

**UNIT - III**

**Air pollution Modeling :** Thermodynamics and Kinetics of Air-pollution – Applications in the removal of gases like SO<sub>x</sub>, NO<sub>x</sub>, CO, HC etc., air-fuel ratio. Computation and Control of products of combustion.

**UNIT – IV**

**Meteorology of air pollutants :** Meteorology and plume Dispersion; properties of atmosphere; Heat, Pressure, Wind forces, Moisture and relative Humidity, Influence of Meteorological phenomena on Air Quality-wind rose diagrams. Lapse Rates, Pressure Systems, Winds and moisture plume behaviour and plume Rise Models; Gaussian Model for Plume Dispersion.

**UNIT - V**

**Control of air pollution** : Control of particulates – Control at Sources, Process Changes, Equipment modifications, Design and operation of control. Equipment's – Settling Chambers, Centrifugal separators, filters Dry and Wet scrubbers, Electrostatic precipitators. General Methods of Control of NO<sub>x</sub> and Sox emissions – In-plant Control Measures, process changes, dry and wet methods of removal and recycling., Air Quality Management – Monitoring of SPM, SO<sub>2</sub>; NO and CO Emission Standards.

**TEXT BOOKS:**

1. M.N.Rao and H.V.N.Rao , "Air pollution controlling" ; Vol.-I, 4<sup>th</sup> ed. , Tata Mc.Graw Hill Company,1998.
2. Wark and Warner, "Air Pollution", Vol.-II, 6<sup>th</sup> ed., Harper & Row, New York, 1996.

**REFERENCE BOOK:**

1. R.K. Trivedy and P.K. Goel , "An introduction to Air pollution", Vol.-I, 1<sup>st</sup> ed., B.S. Publications, 2005